Claims

What is claimed is:

1. A method for etching a feature in an integrated circuit wafer, the wafer incorporating at least one low-k dielectric layer, the method comprising:

disposing the wafer within a reaction chamber;

introducing a flow of fluorocarbon-containing etchant gas into the reaction chamber;

forming a plasma from the etchant gas within the reaction chamber; and

etching the feature in at least a portion of the low-k dielectric layer.

2. The method, as recited in claim 1, wherein the low-k dielectric layer is an organic low-k dielectric layer.

3. The method, as recited in claim 2, wherein the fluorocarbon is selected from a group consisting of CH_3F, CH_2F_2, and CHF_3.

4. The method, as recited in claim 3, wherein the fluorocarbon-containing etchant gas further contains additives selected from the group consisting of oxygen, hydrogen, nitrogen, and ammonia.

5. The method, as recited in claim 4, wherein the organic dielectric layer is made of SiLK.

6. The method, as recited in claim 5, wherein the fluorocarbon has a flow rate, wherein the flow rate of the fluorocarbon is between 0.5 sccm and 50 sccm.

7. The method, as recited in claim 2, wherein the organic dielectric layer is made of SiLK.

8. The method, as recited in claim 7, wherein the fluorocarbon-containing etchant gas comprises CH_3F gas, H_2 gas, and N_2 gas.

9. The method, as recited in claim 7, wherein the fluorocarbon-containing etchant gas comprises CH_3F gas and NH_3 gas.

10. The method, as recited in claim 7, wherein the fluorocarbon-containing etchant gas comprises CH_3F gas, O_2 gas, and N_2 gas.

11. The method, as recited in claim 5, wherein the fluorocarbon has a flow rate, wherein the flow rate of the fluorocarbon is between 0.5 sccm and 50 sccm.

12. The method, as recited in claim 2, wherein the fluorocarbon-containing etchant gas comprises CH_3F gas, H_2 gas, and N_2 gas.

13. The method, as recited in claim 2, wherein the fluorocarbon-containing etchant gas comprises CH_3F gas and NH_3 gas.

14. The method, as recited in claim 2, wherein the fluorocarbon-containing etchant gas comprises CH_3F gas, O_2 gas, and N_2 gas.

15. An integrated circuit on a wafer, wherein the integrated circuit has a feature formed in at least one low-k dielectric layer, wherein the feature is etched by the method, comprising:

disposing the wafer within a reaction chamber;

striking a plasma within the reaction chamber;

introducing a flow of fluorocarbon-containing etchant gas into the reaction chamber; and

with the plasma and the etchant gas in operative combination, etching the feature in at least a portion of the low-k dielectric layer.

16. The integrated circuit, as recited in claim 15, wherein the low-k dielectric layer is an organic low-k dielectric layer.

17. The integrated circuit, as recited in claim 16, wherein the fluorocarbon is selected from a group consisting of CH_3F, CH_2F_2, and CHF_3.

18. The integrated circuit, as recited in claim 17, wherein the fluorocarbon-containing etchant gas further contains additives selected from the group consisting of oxygen, hydrogen, nitrogen, and ammonia.